

REMARKS

Entry of the foregoing, re-examination and reconsideration of the subject matter identified in caption, pursuant to and consistent with 37 C.F.R. §1.114, and in light of the remarks which follow, are respectfully requested.

This Submission is in response to the Examiner's comments attached to the Advisory Action mailed July 15, 2003, and supplements the arguments presented in the Amendment/Reply filed July 3, 2003, responsive to the Final Rejection mailed March 12, 2003.

In the Final Rejection, reliance has been placed essentially on two documents: WO 97/32644 (Reuter) and U.S. Patent No. 5,872,259 to Reuter. Both documents disclose essentially the same apparatus, the same principles and the same procedures except that Reuter '259 relates to macroemulsions while WO '644 relates to microemulsions. The distinctions between the Applicant's invention and the procedures of these references is as follows.

In both Reuter documents, a totally different process is described, namely, a truly continuous process which can run over a longer time, e.g. several days, and where an equilibrium exists for impurities and only the desired substance crystallizes out. A net transfer occurs from the aggregate mixture to the pure crystals that crystallize out in container 5. In other words, since the impurities do not crystallize out, they are present in the mother emulsion at a constant (supersaturation) level and no net transfer to the mother emulsion occurs, while the substance that is crystallized out is transferred. In contrast, the present invention deals with a batch-wise process where the substance

to be crystallized out is removed from the system by crystallization after each addition and complete dissolution of aggregate mixture (impurities and desired substance), while the amount and concentration of the impurities increase with each addition of aggregate mixture. Consequently, the process cannot be repeated endlessly but for only a limited number of times.

With specific reference to the comments in the Advisory Action, Applicant submits the following rebuttal. In both Reuter '259 and WO '644, the only protocols disclosed are how to supersaturate the emulsion in container 5. For the container of column 3, on the other hand, the only process described is how to dissolve the components of the aggregate mixture which are not already present in saturation concentration. In the case of the impurities, before the first crystallization takes place, an equilibrium is established in column/container 3, that is, saturation takes place. The substance(s) to be crystallized out is also dissolved. When transfer takes place to the crystallization container 5, the substance(s) to be crystallized out is/are removed more or less completely. The net amount of impurities returns to column/container 3, and, since saturation is present for the impurities, no net transfer of the impurities takes place, while for the substances that have been crystallized out, a new amount is dissolved.

In the Advisory Action, the Examiner concludes that a passage on page 16, lines 10 to 13 of WO '644 would suggest that a dissolution of both the substances to be crystallized out and the aggregate mixture (with impurities and substance to be crystallized out) takes place repeatedly, as he interprets the reheating or ultrasonic

treatment of the emulsion to mean that it would lead to a further dissolution of impurities. However, in fact, the emulsion is first heated or treated with ultrasound to saturate it with the components; then the emulsion is transferred to crystallization container 5, preferably under cooling in heat exchanger 9a. The result is that in container 5, the solution is supersaturated with regard to all components of the aggregate mixture. Only the substance(s) to be crystallized out is/are then removed by crystallization. The still supersaturated impurities are then returned, optionally through heat exchanger 9 to increase temperature of the microemulsion to that of the feed vessel 3, and then to the column/container 3. Due to the cyclic process, either by cooling/reheating or by ultrasonic treatment under the same conditions as during the first heat/ultrasonic treatment (this is a continuous, steady state process), the emulsion in container/column 3 is already saturated with the impurities. Due to this saturation, no net transfer of impurities from aggregate mixture (1) into the emulsion takes place. Only the substance(s) that were crystallized out is/are again dissolved in the sense of a net transfer. Therefore, the passage quoted by the Examiner in fact does not mean that a net dissolution of impurities occurs. A mass transfer takes place for the substances that are crystallized out.

In the Response filed July 3, 2003, Applicant provided a definition of saturation (see page 5): "A macroscopic amount of substance dissolved cannot exceed a certain concentration." In support of this definition, Applicant makes reference to a very renown German standard textbook, Gerthsen, Kneser and Vogel: "Physik", 13th edition, Springer Verlag, Berlin/Heidelberg/New York 1977), page 199, left column, lines 3 to

10 which reads in translation: "In a saturated solution an equilibrium similar to that in a saturated gas phase is present. During each time unit the number of molecules escaping from the excess undissolved solid is identical to the number of molecules precipitating (condensating or crystallizing, respectively) from the solution at the excess undissolved solid." Therefore, in a state of saturation equilibrium, no net transfer takes place. This is a classic definition of saturation.

Thus, the processes explicitly disclosed in Reuter '259 and WO '644 are steady state operations whereas the claimed method is an unsteady state operation. Also, step (e) in the present claims specifies dissolving additional impure substance in the emulsion-filtrate. In the references, additional impure substance is not dissolved but only molecules of impurities being substituted by other molecules of impurities. Reference is made to the schemes on page 6 of the previous response for a clear picture of the distinctions between the present invention and the processes of the cited art.

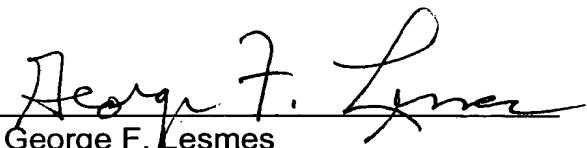
Applicant respectfully submits that the present claims are patentable over the disclosures of Reuter '259 and WO '644 for the reasons presented above and those set forth in the response filed July 3, 2003.

Further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

If any issues remain outstanding, or should the Examiner have any questions concerning the foregoing amendments and remarks, a telephone call to the undersigned would be appreciated.

Respectfully submitted,

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